CONTENTS OF VOLUME 56

THE UNIVERSITY OF IOWA
OCT 04 2001
LIBRARIES

Number 1

Graphical Abstracts vii

Molecules of Interest
Combinatorial biochemistry in plants: the case of *O*-methyl-transferases 1 S. Frick, A. Ounaroon and T. M. Kutchan

Review
The chemical diversity and distribution of glucosinolates and isothiocyanates among plants 5 J. W. Fahey, A. T. Zalcmann and P. Talalay

Protein Biochemistry
Purification and characterization of a lectin from the mushroom *Mycoleptodonoides aitchisonii* 53 H. Kawagishi, J. Takagi, T. Taira, T. Murata and T. Usui

Metabolism
Tropane alkaloid production by shoot culture of *Duboisia myoporoides* R. Br. 59 N. Khanam, C. Khoo, R. Close and A. G. Khan

Metabolism of gibberellins A_1 and A_3 in fruits and shoots of *Prunus avium* 67 M. Huanpu, P. S. Blake, G. Browning and J. M. Taylor

Ecological Biochemistry
Profiling changes in metabolism of isoflavonoids and their conjugates in *Lupinus albus* treated with biotic elicitor 77 P. Bednarek, R. Frański, L. Kerhoas, J. Einhorn, P. Wojtaszek and M. Stobiecki

Chemotaxonomy
A distinctive flavonoid chemistry for the anomalous genus *Biebersteinia* 87 J. Greenham, D. D. Vassiliades, J. B. Harborne, C. A. Williams, J. Eagles, R. J. Grayer and N. C. Veitch

Bioactive Products
Bioactive oleanolic acid saponins and other constituents from the roots of *Viguiera decurrens* 93 S. Marquina, N. Maldonado, M. L. Garduño-Ramírez, E. Aranda, M. L. Villarreal, V. Navarro, R. Bye and G. Delgado, L. Alvarez

Trianthenol: an antifungal tetraterpenoid from *Trianthema portulacastrum* (Aizoaceae) 99 H. R. Nawaz, A. Malik and M. S. Ali

Chemistry
Cytotoxic labdane diterpenoids from *Croton oblongifolius* 103 S. Roengsumran, A. Petsom, N. Kuptiyanuwat, T. Vilaivan, N. Ngamrojnavanich, C. Chaichantipyuth and S. Phuthong

Phenylbutanoid dimers from the leaves of *Alpinia flabellata* 109 H. Kikuzaki, S. Tesaki, S. Yonemori and N. Nakatani

Book review 115

Number 2

Graphical Abstracts vii

Editorial comment
Global phytochemistry: the ethnobotanist view 117 M. J. Plotkin

Molecular Genetics and Genomics
Investigation of avenacin-deficient mutants of *Avena strigosa* 121 M. R. Trojanowska, A. E. Osbourn, M. J. Daniels and D. R. Threlfall

PII: S0031-9422(01)00222-9

Metabolism

The study of a monocotyledon abscission zone using microscopic, chemical, enzymatic and solid state ^{13}C CP/MAS NMR analyses — 131 — J. Henderson, H. A.Davies, S. J.Heyes and D. J.Osborne

Biotransformation of diterpenes and diterpene derivatives by *Beauveria bassiana* ATCC 7159 — 141 — G. O. Buchanan and P. B. Reese

The ABC-like vacuolar transporter for rye mesophyll flavone glucuronides is not species-specific — 153 — M. Klein, E. Martinoia, G. Hoffmann-Thoma and G. Weissenböck

Ecological Biochemistry

In vitro inhibition of *Sphaeropsis sapinea* by natural stilbenes — 161 — C. C. Celimene, D. R. Smith, R. A. Young, G. R. Stanosz

Bioactive Products

Bioactive humulene derivatives from *Asteriscus vogelii* — 167 — A. P. Rauter, I. Branco, J. Bermejo, A. G. González, M. D. García-Grávalos and A. S. Feliciano

A new triterpenoid from the fern *Adiantum lunulatum* and evaluation of antibacterial activity — 173 — V. L. Niranjan Reddy, V. Ravikanth, T. Prabhakar Rao, P. V. Diwan and Y. Venkateswarlu

Diterpenoids from *Azorella yareta* and their trichomonicidal activities — 177 — L. A. Loyola, J. Bórquez, G. Morales, J. Araya, J. González, I. Neira, H. Sagua and A. San-Martín

Chemistry

Further glucosides of lichens' acids from Central Asian lichens — 181 — T. Řezanka and I. A. Guschina

Polyphenolic compounds from *Geranium pratense* and their free radical scavenging activities — 189 — Z. Ş. Akdemir, İ. İrem Tatli, İ. Saracoğlu, U. B. İsmailoğlu, İ. Şahin-Erdemli and İ. Çalış

Synthesis, characterisation and water sorption properties of pectin-dehydrogenation polymer (lignin model compound) complex — 195 — B. Cathala, B. Chabbert, C. Joly, P. Dole and B. Monties

Terpenoids from *Guarea rhophalocarpa* — 203 — M. del Rayo Camacho, J. D. Phillipson, S. L. Croft, G. C. Kirby, D. C. Warhurst and P. N. Solis

Book reviews — 211

Announcement — 215

Number 3

Graphical Abstracts — vii

Appreciation and communications in honour of the retirement of Jeffrey Harborne FRS as Editor of *Phytochemistry* — 217 — G. P. Bolwell, N. G. Lewis and D. Strack

A brief history of the journal *Phytochemistry* 1961–1999 — 219 — J. B. Harborne

Ecological biochemistry and its development — 223 — E. A. Bell

Contributions of Jeffrey Harborne and co-workers to the study of anthocyanins — 229 — G. A. Cooper-Driver

Phytochemistry and medicinal plants — 237 — J. D. Phillipson

Importance of flavonoids in insect–plant interactions: feeding and oviposition — 245 — M. S. J. Simmonds

Reviews

Plant–fungal interactions: the search for phytoalexins and other antifungal compounds from higher plants — 253 — R. J. Grayer and T. Kokubun

Polyhydroxylated alkaloids — natural occurrence and therapeutic applications — 265 — A. A. Watson, G. W. J. Fleet, N. Asano, R. J. Molyneux and R. J. Nash

Recent advances in phytochemistry of bryophytes-acetogenins, terpenoids and bis(bibenzyl)s from selected Japanese, Taiwanese, New Zealand, Argentinean and European liverworts — 297 — Y. Asakawa

Announcement — 313

Number 4

Graphical Abstracts vii

Announcement xiii

Announcement xix

Terpenoids

Minor diterpenes from *Persea indica*: their antifeedant activity 315 B. M. Fraga, D. Terrero, C. Gutiérrez and A. González-Coloma

Constituents of the essential oil of *Cyperus alopecuroides* 321 M. M. Sonwa and W. A. König

Secoiridoid constituents from the fruits of *Ligustrum lucidum* 327 Z.-D. He, H. Dong, H.-X. Xu, W.-C. Ye, H.-D. Sun and P. P.-H. But

Triterpenoids from *Dysoxylum malabaricum* 331 A. Hisham, M. D. Ajitha Bai, G. JayaKumar, M. S. Nair and Y. Fujimoto

Guaiane dimers from *Xylopia vielana* 335 C. Kamperdick, N. M. Phuong, T. Van Sung and G. Adam

Sesquiterpene polyol esters from *Tripterygium wilfordii* 341 H.-Q. Duan, Y. Takaishi, Y.-F. Jia and D. Li

Sesqui- and diterpenoids from two Japanese and three European liverworts 347 F. Nagashima and Y. Asakawa

Phenolics

Flavonoids from *Ochna integerrima* 353 K. Likhitwitayawuid, R. Rungserichai, N. Ruangrungsi and T. Phadungcharoen

Anthocyanins from red flower tea (Benibana-cha), *Camellia sinensis* 359 N. Terahara, Y. Takeda, A. Nesumi and T. Honda

Further isoflavonoid metabolites from *Millettia griffoniana* (Bail) 363 E. Yankep, J. T. Mbafor, Z. T. Fomum, C. Steinbeck, B. B. Messanga, B. Nyasse, H. Budzikiewicz, C. Lenz and H. Schmickler

Lignan glucosides from *Acanthus ilicifolius* 369 T. Kanchanapoom, M. S. Kamel, R. Kasai, K. Yamasaki, C. Picheansoonthon and Y. Hiraga

A malonylated anthocyanin and flavonols in blue *Meconopsis* flowers 373 M. Tanaka, T. Fujimori, I. Uchida, S. Yamaguchi and K. Takeda

Phenylbutanoids and stilbene derivatives of *Rheum maximowiczii* 377 Y. Shikishima, Y. Takaishi, G. Honda, M. Ito, Y. Takeda, O. K. Kodzhimatov and O. Ashurmetov

Alkaloids

Canthin-6-one and β-carboline alkaloids from *Eurycoma harmandiana* 383 T. Kanchanapoom, R. Kasai, P. Chumsri, Y. Hiraga and K. Yamasaki

General Chemistry

The absolute configuration of (+)-isoshinanolone and in situ LC–CD analysis of its stereoisomers from crude extracts 387 G. Bringmann, K. Messer, W. Saeb, E.-M. Peters and K. Peters

Saponins from the roots of *Zygophyllum gaetulum* and their effects on electrically-stimulated guinea-pig ileum 393 R. Aquino, S. Tortora, S. Fkih-Tetouani and A. Capasso

Five naphthalene glycosides from the roots of *Rumex patientia* 399 Ö. Demirezer, A. Kuruüzüm, I. Bergere, H.-J. Schiewe and A. Zeeck

Number 5

Graphical Abstracts vii

Editorial comment

Who benefits from biopiracy? 403 R. J. Nash

Protein Biochemistry

Cytosolic aldolase is a ripening related enzyme in strawberry fruits (*Fragaria* × *ananassa*) 407 W. Schwab, A. Aharoni, T. Raab, A. G. Pérez and C. Sanz

Metabolism
Biotransformation of cedrol by *Curvularia lunata* ATCC 12017 417 D. O. Collins and P. B. Reese

Ripening-related changes in raspberry cell wall composition and structure 423 D. Stewart, P. P. M. Iannetta and H. V. Davies

Formation and occurrence of dopamine-derived betacyanins 429 N. Kobayashi, J. Schmidt, V. Wray and W. Schliemann

Ecological Biochemistry
Seasonal variation in hypericin content of *Hypericum perforatum* L. (St. John's Wort) 437 I. A. Southwell and C. A. Bourke

The ecological and taxonomic importance of flower volatiles of *Clusia* species (Guttiferae) 443 P. C. de L. Nogueira, V. Bittrich, G. J. Shepherd, A. V. Lopes and A. J. Marsaioli

Chemotaxonomy
Flavonoid characters contributing to the taxonomic revision of the *Hebe parviflora* complex 453 K. A. Mitchell, K. R. Markham and M. J. Bayly

Bioactive Products
Ambuic acid, a highly functionalized cyclohexenone with antifungal activity from *Pestalotiopsis* spp. and *Monochaetia* sp. 463 J. Y. Li, J. K. Harper, D. M. Grant, B. O. Tombe, B. Bashyal, W. M. Hess and G. A. Strobel

Chemistry
Lactone diterpenes from the aquatic plant *Potamogeton natans* 469 T. Cangiano, M. DellaGreca, A. Fiorentino, M. Isidori, P. Monaco and A. Zarrelli

Germacranolides from *Mikania guaco* 475 P. Rüngeler, V. Brecht, G. TamayoCastillo and I. Merfort

Five saponins from the root bark of *Aralia elata* 491 S.-J. Song, N. Nakamura, C.-M. Ma, M. Hattori and S.-X. Xu

Lepidimoic acid increases fructose 2,6-bisphosphate in *Amaranthus* seedlings 499 H. KatoNoguchi, K. Yamada and K. Hasegawa

Monooxygenases involved in GA_{12} and GA_{14} synthesis in *Gibberella fujikuroi* 505 O. Urrutia, P. Hedden and M. C. Rojas

Ferulic acid is esterified to glucuronoarabinoxylans in pineapple cell walls 513 B. G. Smith and P. J. Harris

Book Review
Mycorrhizal biology, edited by K.G. Mukerji, B.P. Chaimeia and J. Singh 521 A. Anderson

Number 6

Graphical Abstracts vii

Protein Biochemistry
L-Tyrosine β-naphthylamide is a potent competitive inhibitor of tyramine *N*-(hydroxycinnamoyl)transferase in vitro 523 J. Negrel and F. Javelle

Interaction of metal ions with lupin seed conglutin γ 529 M. Duranti, A. Scarafoni, A. Di Cataldo and F. Sessa

Molecular Genetics and Genomics
Patterns of phenylpropanoids in non-inoculated and potato virus Y-inoculated leaves of transgenic tobacco plants expressing yeast-derived invertase 535 A. Baumert, H.-P. Mock, J. Schmidt, K. Herbers, U. Sonnewald and D. Strack

Predicting quantitative phytochemical markers in single *Echinacea* plants or clones from their DNA fingerprints 543 B. R. Baum, S. Mechanda, J. F. Livesey, S. E. Binns and J. T. Arnason

Metabolism
Biosynthesis of the bicycloalternarenes, mixed terpenoids of *Alternaria alternata* 551 B. Liebermann, R.-P. Nussbaum, W. Günther and J.-M. Teuscher

Ecological Biochemistry
Distribution of 8-oxygenated leaf-surface flavones in the genus *Ocimum* 559 R. J. Grayer, N. C. Veitch, G. C. Kite, A. M. Price and T. Kokubun

Phytoecdysteroids in the genus *Asparagus* (Asparagaceae) 569 L. Dinan, T. Savchenko and P. Whiting

A species-selective allelopathic substance from germinating sunflower (*Helianthus annuus* L.) seeds — 577 — S. Ohno, K. Tomita-Yokotani, S. Kosemura, M. Node, T. Suzuki, M. Amano, K. Yasui, T. Goto, S. Yamamura and K. Hasegawa

Chemotaxonomy
A computer-assisted approach for chemotaxonomic studies — diterpenes in Lamiaceae — 583 — S. A. Vestri Alvarenga, J. Pierre Gastmans, G. do Vale Rodrigues, P. R. H. Moreno and V. de Paulo Emerenciano

Bioactive Products
Effects of temperature on polyunsaturation in cytostatic lipids of *Haslea ostrearia* — 597 — S. J. Rowland, S. T. Belt, E. J. Wraige, G. Massé, C. Roussakis and J.-M. Robert

Membrane disruption and enzyme inhibition by naturally-occurring and modified chacotriose-containing *Solanum* steroidal glycoalkaloids — 603 — J. G. Roddick, M. Weissenberg and A. L. Leonard

Chemistry
Furanocoumarins from *Dorstenia gigas* — 611 — K. Franke, A. Porzel, M. Masaoud, G. Adam and J. Schmidt

Tetrahydroisoquinoline-monoterpene and iridoid glycosides from *Alangium lamarckii* — 623 — A. Itoh, T. Tanahashi, M. Tabata, M. Shikata, M. Kakite, M. Nagai and N. Nagakura

Flavonoids and phenylpropanoid derivatives from *Campanula barbata* — 631 — M. Cuendet, O. Potterat and K. Hostettmann

Alkaloids from *Crinum moorei* — 637 — E. E. Elgorashi, S. E. Drewes and J. van Staden

Book Reviews

Allelopathy Update. Volume 1, International Status, Volume 2, Basic and Applied Aspects, edited by S. S. Narwal — 641 — J. B. Harborne

Plant Responses to Environmental Stresses: From Phytohormones to Genome Reorganization, edited by H. R. Lerner — 641 — B. Tudzynski

Number 7

Graphical Abstracts — vii

Announcement — xiii

Protein Biochemistry
Agmatine deiminase from maize shoots: purification and properties — 643 — H. Yanagisawa

Purification and characterization of coclaurine *N*-methyltransferase from cultured *Coptis japonica* cells — 649 — K.-B. Choi, T. Morishige and F. Sato

Metabolism
Identification of phytochelatin-related peptides in maize seedlings exposed to cadmium and obtained enzymatically in vitro — 657 — H. Chassaigne, V. Vacchina, T. M. Kutchan and M. H. Zenk

Ecological Biochemistry
Induced accumulation of 2-hydroxy-4,7-dimethoxy-1,4-benz-oxazin-3-one glucoside (HDMBOA-Glc) in maize leaves — 669 — A. Oikawa, A. Ishihara, M. Hasegawa, O. Kodama and H. Iwamura

Visible light-dependent degradation of long-chain alkenes in killed cells of *Emiliania huxleyi* and *Nannochloropsis salina* — 677 — A. Mouzdahir, V. Grossi, S. Bakkas and J.-F. Rontani

Silicon and heavy metal tolerance of higher plants — 685 — D. Neumann and U. zur Nieden

Occurrence of the insecticidal 16,17-didehydro-16(*E*)-stemofoline in *Stemona collinsae* — 693 — S. Jiwajinda, N. Hirai, K. Watanabe, V. Santisopasri, N. Chuengsamarnyart, K. Koshimizu and H. Ohigashi

Sequestration of phenanthroindolizidine alkaloids by an Asclepiadaceae-feeding danaid butterfly, *Ideopsis similis* — 697 — F. Abe, T. Yamauchi, K. Honda, H. Ômura and N. Hayashi

Chemotaxonomy
Fragrance volatiles of developing and senescing carnation flowers — 703 — F. Schade, R. L. Legge and J. E. Thompson

Anthocyanins from the scarlet flowers of *Anemone coronaria* 711 K. Toki, N. Saito, A. Shigihara and T. Honda

Bioactive Products

Kaempferide triglycoside: a possible factor of resistance of carnation (*Dianthus caryophyllus*) to *Fusarium oxysporum* f. sp. *dianthi* 717 P. Curir, M. Dolci, V. Lanzotti and O. TaglialatelaScafati

Bioactive constituents from gum guggul (*Commiphora wightii*) 723 N. Zhu, M. M. Rafi, R. S. DiPaola, J. Xin, C.-K. Chin, V. Badmaev, G. Ghai, R. T. Rosen and C.-T. Ho

Inhibitors of platelet lipoxygenase from Ponkan fruit 729 Y. Nogata, K. Sekiya, H. Ohta, K.-I. Kusumoto and T. Ishizu

Soybean ethanol extract increases the function of osteoblastic MC3T3-E1 cells 733 E. M. Choi, K. S. Suh, Y. S. Kim, R. W. Choue and S. J. Koo

Chemistry

Withanolide-type steroids from *Solanum cilistum* 741 X.-H. Zhu, M. Takagi, T. Ikeda, K. Midzuki and T. Nohara

Pyrone and pyridone compounds in the liquid culture of *Physisporinus sanguinolentus* 747 M. Svensson, L. N. Lundgren, C. Woods, J. Fatehi and J. Stenlid

Four alkaloids from *Annona cherimola* 753 C.-Y. Chen, F.-R. Chang, W.-B. Pan and Y.-C. Wu

Phenolic constituents from the core of Kenaf (*Hibiscus cannabinus*) 759 A. M. L. Seca, A. M. S. Silva, A. J. D. Silvestre, J. A. S. Cavaleiro, F. M. J. Domingues and C. Pascoal-Neto

Erysubins C–F, four isoflavonoids from *Erythrina suberosa* var. *glabrescences* 769 H. Tanaka, H. Etoh, N. Watanabe, H. Shimizu, M. Ahmad and G. H. Rizwani

A pregnane steroid from *Aglaia lawii* and structure confirmation of cabraleadiol monoacetate by X-ray crystallography 775 S.-X. Qiu, N. van Hung, L. T. Xuan, J.-Q. Gu, E. Lobkovsky, T. C. Khanh, D. D. Soejarto, J. Clardy, J. M. Pezzuto, Y. Dong, M. V. Tri, L. M. Huong and H. H. S. Fong

Alkyl phenols and derivatives from *Tapirira obtusa* 781 S. J. Correia, J. M. David, J. P. David, H.-B. Chai, J. M. Pezzuto and G. A. Cordell

Book Reviews

Illustrated Dictionary of Mycology, by M. Ulloa and R. T. Hanlin 785 J. B. Harborne

Plant–Microbe Interactions, edited by G. Stacey and N. T. Keen 785 J. B. Harborne

Number 8

Graphical Abstracts vii

Terpenoids

Concentricol, a taxonomically significant triterpenoid from *Daldinia concentrica* 787 M. Stadler, M. Baumgartner, T. Grothe, A. Mühlbauer, S. Seip and H. Wollweber

Tetra-unsaturated sesterterpenoids (Haslenes) from *Haslea ostrearia* and related species 795 W. G. Allard, S. T. Belt, G. Massé, R. Naumann, J.-M. Robert and S. Rowland

Sterols from the fungus *Lactarium volemus* 801 J.-M. Yue, S.-N. Chen, Z.-W. Lin and H.-D. Sun

seco-Cuparane-type sesquiterpenoid from the Japanese liverwort *Jungermannia infusca* 807 F. Nagashima, M. Suzuki and Y. Asakawa

Labdane and pimarane diterpenes from *Croton joufra* 811 S. Sutthivaiyakit, P. Nareeboon, N. Ruangrangsi, S. Ruchirawat, S. Pisutjaroenpong and C. Mahidol

Dammarane derivatives from the dried fruits of *Forsythia suspensa* 815 A. S. S. Rouf, Y. Ozaki, M. A. Rashid and J. Rui

The (3*R*,9*R*)-3-hydroxy-7,8-dihydro-β-ionol disaccharide glycoside is an aroma precursor in tea leaves 819 S.-J. Ma, N. Watanabe, A. Yagi and K. Sakata

Phenolics

Constituents of *Afzelia bella* stem bark 827 O. A. Binutu and G. A. Cordell

3-Desoxyanthocyanidins from *Arrabidaea chica* 831 B. Zorn, A. J. García-Piñeres, V. Castro, R. Murillo, G. Mora and I. Merfort

Flavonoids from the stem bark of *Bolusanthus speciosus* 837 G. Bojase, C. C. W. Wanjala and R. R. T. Majinda

Identification of a sucrose diester of a substituted β-truxinic acid in oats 843 L. H. Dimberg, R. E. Andersson, S. Gohil, S. Bryngelsson and L. N. Lundgren

Bianthraquinones from *Cassia siamea* 849 J. Koyama, I. Morita, K. Tagahara and M. Aqil

Xanthones and flavonoids from *Leiothrix curvifolia* and *Leiothrix flavescens* 853 L. C. Santos, S. Piacente, F. De Riccardis, A. M. Eletto, C. Pizza and W. Vilegas

Alkaloids

Antimicrobial alkaloids from *Zanthoxylum tetraspermum* and *caudatum* 857 A. P. K. Nissanka, V. Karunaratne, B. M. R. Bandara, V. Kumar, T. Nakanishi, M. Nishi, A. Inada, L. M. V. Tillekeratne, D. S. A. Wijesundara and A. A. L. Gunatilaka

The co-occurrence of C(3) epimer N_b,C(21)-secocuran alkaloids in *Strychnos diplotricha* and *Strychnos myrtoides* 863 P. Rasoanaivo, G. Palazzino, M. Nicoletti and C. Galeffi

General Chemistry

Bromoallenic lipid compounds from lichens of central Asia 869 T. Řezanka and V. M. Dembitsky

Triterpene and flavanone glycoside from *Rhododendron simsii* 875 H. Takahashi, S. Hirata, H. Minami and Y. Fukuyama

Passifloricins, polyketides α-pyrones from *Passiflora foetida* resin 881 F. Echeverri, V. Arango, W. Quiñones, F. Torres, G. Escobar, Y. Rosero and R. Archbold